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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,372	06/05/2001	Fredrik Laurell	003300-788	5761

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EXAMINER

LANDAU, MATTHEW C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/17/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/873,372

Applicant(s)

LAURELL ET AL.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Claim 10 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

Applicant's election of Species I, drawn to claims 1-9 and 11-13 in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 6, and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the near infrared spectral region" in lines 5 and lines 6 and 7. There is insufficient antecedent basis for this limitation in the claim.

In regards to claim 2, the term "essentially" is a relative term which renders the claim indefinite. The term "essentially" is not defined by the claim, the specification does not provide

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a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The wavelength of the emitted radiation is rendered indefinite by the use of this term.

In regards to claims 3 and 4, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 3 and 4 recite the broad recitation "smaller than about 5mm", and the claims also recite "preferably smaller than 1mm" which is the narrower statement of the range/limitation. Furthermore, claims 3 and 4 recite the limitations "the length", "the propagation direction", and "the laser light". There is insufficient antecedent basis for these limitations in the claims.

In regards to claim 6, the term "about" is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

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reasonably apprised of the scope of the invention. The upper limit of the wavelength range is rendered indefinite by the use of this term.

In regards to claim 7, the term "about" is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The wavelength of the emitted light is rendered indefinite by the use of this term.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 9, 11, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thony et al. (US Pat. 6,023,479, hereinafter Thony) in view of Wu et al.

In regards to claims 1 and 13, Figure 1 of Thony discloses a microchip laser arrangement, comprising a first chip 2 of active material operative to emit radiation in the near infrared spectral region (column 2, lines 28-32), a second chip 4 of optically beachable (saturable absorber) material, which can be bleached by optical radiation in the near infrared spectral region, a pump diode laser operative optically to excite said active material (column 6, lines 58-

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60), and a first and second mirror (6 and 8) enclosing said first chip 2 and second chip 4, in order to form a resonant laser cavity. The difference between Thony and the claimed invention is the optically bleachable material comprises a cobalt-doped crystal of spinel type. Wu et al. discloses using $\text{Co}^{2+}:\text{MgAl}_2\text{O}_3$ materials for saturable absorber Q-switches (see page 1, paragraph 1). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Thony by using $\text{Co}^{2+}:\text{MgAl}_2\text{O}_3$ for the optically bleachable material. The ordinary artisan would have been motivated to modify Thony in the manner described above for the purpose of selecting a material with a large absorption cross section.

In regards to claim 2, Thony discloses the active material comprises erbium-doped glass, operative to emit radiation at essentially 1.54 microns when optically pumped (column 4, lines 34-56).

In regards to claim 3, Thony discloses the length of the chip of active material, in the propagation direction of the laser light, is smaller than about 5mm (column 3, lines 55-60).

In regards to claim 4, Thony discloses the length of the chip of bleachable material, in the propagation direction of the laser light, is smaller than about 5mm (column 2, lines 54-57).

In regards to claim 5, Figure 1 of Thony discloses the laser diode (which emits pump beam 12) is arranged for longitudinal pumping of light into the active material.

In regards to claim 6, Thony discloses the laser diode emits light at 980 nm (column 6, lines 58-60).

In regards to claim 9, Thony discloses at least one lens for focusing the light from the diode (column 6, lines 27-38).

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In regards to claim 11, Figure 1 of Thony discloses the chip of active material 2 and the chip of optically bleachable material 4 are bonded together to form a monolithic body.

In regards to claim 12, Figure 1 of Thony discloses mirrors (6 and 8) in the form of dielectric stacks are provided upon the end surfaces of the monolithic body, in order to form a resonant laser cavity enclosing the active material and the optically bleachable material (column 9, lines 1 and 2).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thony in view of Wu et al. as applied to claim 5 above, and further in view of Molva et al. (US Pat. 5,495,494, hereinafter Molva).

A further difference between Thony and the claimed invention is the chip of optically bleachable material is positioned closer to the diode laser than the chip of active material, in order for light emitted by the diode to pass through the bleachable material before entering the active material. Figure 4a of Molva discloses monolithic microchip laser arrangement with a saturable absorber film (optically bleachable material) between the active material 8 and the entrance mirror 14, which means the absorber layer 22 is closer to the laser diode (column 8, lines 45-52). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to further modify the invention of Thony by including an additional saturable absorber layer between the laser diode and the chip of active material. The ordinary artisan would have been motivated to modify Thony in the manner described above for the purpose of absorbing more energy from the pump beam.

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Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thony in view of Wu et al. as applied to claim 6 above, and further in view of DiGiovanni et al.

Thony discloses the laser diode emits light at 980 nm (column 6, lines 58-60). A further difference between Thony and the claimed invention is the laser diode is an InGaAs diode. DiGiovanni discloses using an InGaAs laser diode D1 as a pump source (column 3, lines 33-43). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to further modify the invention of Thony by using an InGaAs laser diode. The ordinary artisan would have been motivated to modify Thony in the manner described above for the purpose of obtaining the desired wavelength light.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached from 8:00 AM-4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Matthew C. Landau

Examiner

October 14, 2002